

REMARKS

Claims 20, 28, 31, 33-35, 38, 40-42, 45, 47-50, 53 and 55-60 are pending in this application, with claims 20, 34, 41 and 49 being independent. Claims 20, 34, 41 and 49 have been amended. In particular, each of claims 20 and 34 has been amended to recite that the semiconductor layer defines a recess having a third opening located in a top surface of the source region. Each of claims 41 and 49 has been amended to recite that the semiconductor layer includes a source region and has a side recess in the source region, and that the source electrode is in contact with the semiconductor layer through a contact hole that is opened in the interlayer insulating film and the gate insulating film. Each of claims 41 and 49 has also been amended to recite that the contact hole is directly over the source region. Support for the amendment to the claims can be found in the application at least at Figs. 3A to 3C and the accompanying text. No new matter has been introduced.

Independent claims 20 and 34, and their dependent claims 28, 31, 35, 38, 57 and 58, have been rejected as being unpatentable over Hollinger (U.S. Patent No. 5,089,434) in view of Kudoh (U.S. Patent No. 5,159,416) and Tanaka (U.S. Patent No. 5,798,744). Claims 33 and 40, which depend from claims 20 and 34, respectively, have been rejected as being unpatentable over Hollinger in view of Kudoh, Tanaka and Applicant Admitted Prior Art (AAPA).

Each of independent claims 20 and 34, as amended, recites, among other features, a contact hole extending from a first opening located at a top surface of the gate insulating film to a second opening located at a bottom surface of the gate insulating film, and a semiconductor layer that defines a recess having a third opening located in a top surface of the source region that is in communication with a second opening. The third opening defines an area that is greater than an area defined by the second opening such that a portion of the gate insulating film extends directly over a portion of the recess. Applicants request reconsideration and withdrawal of the rejections of claims 20 and 34, and their dependent claims, because neither Hollinger, Kudoh, Tanaka, AAPA, nor any proper combination of the four describes or suggests the recited semiconductor layer.

As best understood, the Office Action is asserting that the recited semiconductor layer corresponds to Hollinger's N-doped epitaxial layer 20, that the recited source region corresponds to Hollinger's N⁺ doped region 24, and that the recited contact hole corresponds to the hole shown in Fig. 15 of Hollinger between two spacers 62 and extending from an opening at a top surface of the spacers 62 (corresponding to the recited first opening) to an opening at a bottom surface of the spacers 62 (corresponding to the recited second opening). As shown in Figs. 15 and 16 of Hollinger, multiple anisotropic etches are performed to etch a recess or trench 60 in the epitaxial layer 20 that has a stairstep profile and an overhang 64. The Examiner appears to equate the recited recess with the trench 60. Notably, however, the trench 60 does not have a third opening located in a top surface of the N⁺ doped region 24 that has an area greater than an area defined by the opening between the two spacers 62 that is located at the bottom surface of the spacers 62. Rather, while Hollinger appears to show in Figs. 15 and 16 that the N⁺ doped region 24 has an opening located in its top surface at the location of overhang 64, this opening has a much smaller area than that of the opening located between the two spacers 62 located at the bottom surface of the spacers 62. Therefore, Hollinger fails to describe or suggest the recited semiconductor layer.

Tanaka, which is relied upon by the Office Action as teaching that a first layer can be a germanium compound; Kudoh, which is relied upon by the Office Action as teaching using a device as a thin film transistor such that the semiconductor layer is on an insulating surface, using an interlayer insulating film, and using a source electrode that contains a second layer; and AAPA, which is relied upon by the Office Action as teaching using the device as an active matrix type EL display device, also fail to describe or suggest the recited semiconductor layer.

For at least these reasons, applicants request reconsideration and withdrawal of the rejections of claims 20 and 34, and their dependent claims.

Independent claims 41 and 49, and their dependent claims 42, 45, 47, 50, 53, 55, 59 and 60, have been rejected as being unpatentable over Hollinger in view of Kudoh, Tanaka and Miyakawa (U.S. Patent No. 5,278,449). As stated above, each of claims 41 and 49 has been amended to recite that the semiconductor layer includes a source region and has a side recess in

the source region, and that the source electrode is in contact with the semiconductor layer through a contact hole that is opened in the interlayer insulating film and the gate insulating film. Each of claims 41 and 49 has also been amended to recite that the contact hole is directly over the source region. Applicants request reconsideration and withdrawal of the rejection of claims 41 and 49, and their dependent claims, because neither Hollinger, Kudoh, Tanaka, Miyakawa, nor any proper combination of the four describes or suggests these features.

As stated previously, Hollinger describes a device that includes an N⁺ doped region 24, which the Office Action appears to equate with the source region recited in claims 20 and 34. Notably, however, Hollinger does not describe or suggest that a contact hole is positioned directly over the N⁺ doped region 24. Rather, as shown in Fig. 15 of Hollinger, spacer 62, which the Office Action asserts corresponds to the recited gate insulating film, is positioned directly over the N⁺ doped region 24, and no contact hole is opened within spacer 62.

While Kudoh teaches forming a contact hole through a gate insulating film and an interlayer insulating film, applicants submit that a person of ordinary skill in the art would not have modified Hollinger to open a contact hole within spacer 62 directly over the N⁺ doped region 24 based on Kudoh's teachings. As stated in col. 7, lines 58-60 of Hollinger, "sidewalls [spacers] 62 will also enhance the isolation of the aforementioned gate 12 and source 16." Applicants submit that if a contact hole is formed in spacers 62, the ability of spacers 62 to isolate the gate 12 from the source 16 would be destroyed due to the removal of a portion of the isolating material from the spacers 62. Accordingly, applicants submit that such a modification would destroy the intended purpose of spacers 62 and, therefore, that a person of ordinary skill in the art would not have modified Hollinger's device in this manner. Tanaka and Miyakawa also fail to describe or suggest the above-noted features.

For at least these reasons, applicants request reconsideration and withdrawal of the rejections of claims 41 and 49, and their dependent claims.

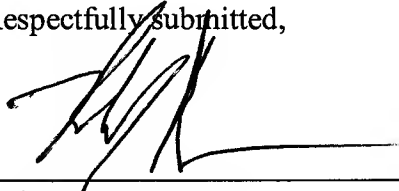
Applicants submit that all claims are in condition for allowance.

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No fees are believed due in connection with this filing. However, if any fees or refunds are due, please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,



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